

## THE MINERAL INDUSTRY OF

# BOTSWANA

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Botswana was the one of the world's leading producers of diamond, which remained the foundation of the country's economy in 1994 as it had for nearly two decades. Nickel and copper also played a significant, though smaller, role in the national economy. Other valuable minerals produced included clay, coal, semiprecious gemstones, gold, salt, sand, silver, soda ash, and construction stone. Diamond, gold, and platinum-group metals were the most notable targets of exploration during 1994; however, much of Botswana's potential mineral resources remained unexplored. Preliminary petroleum exploration also began during the year.

The mineral industry was the principal reason the country had a high per capita gross domestic product (GDP) and a surplus in balance of payments. The industry typically accounted for more than 40% of the GDP. It also provided more than 85% of exports, as well as about 50% of Government revenue.

### Government Policies and Programs

The Government recognized and actively promoted the nation's mineral potential and its stable political history has sustained interest in the country by the mining industry and other investors. The Government's development-oriented fiscal prudence, free market philosophy, and flexibility and fairness in dealing with investors were also factors in attracting foreign investment. The Government, in order to reduce the economy's heavy dependence on diamond, was interested in industrial diversification. Private-sector growth and job creation, especially in manufacturing and tourism, were emphasized as national development objectives.

The Government encouraged foreign investment in Botswana. There were no restrictions on reinvestments or repatriation of earnings and capital, and the Government further liberalized exchange controls at yearend 1994. Botswana has never nationalized or expropriated any foreign business. It carefully followed its established rules for investment, and its courts repeatedly upheld contracts. Government corruption was rare and penalties severe. An investment guarantee agreement with the United States was signed in 1968, and Botswana also was a member of the Multilateral Investment Guarantee Agency (MIGA), the World Bank's political insurance unit.

To aid the private sector's participation in the economy, the Government took measures to better the human resources aspect in the areas of training, education, and health.

Infrastructure improvements were implemented in transportation, power, communication, and water supply.

The Ministry of Mineral Resources and Water Affairs had responsibility for the mining sector. The Ministry granted reconnaissance permits (for 1-year general prospecting) and prospecting licenses (for 3 years plus two 2-year extensions with minerals and area specified). It negotiated 25-year mining leases with project plans, financial aspects, and lease extension conditions specified. Subunits of the Ministry also carried out geological surveys and made mine safety and environmental inspections and collected mineral production information.

Mining activity was regulated by the Mineral and Mining Act. Mineral rights, vested in the State, were separate from surface rights. On significant mineral ventures, the Government normally exercised its legal right to acquire for free an equity interest of 15% to 25%. Royalties also were collected on certain mineral sales, such as 3% on base metals, 5% on gold, and 10% on diamonds. Though also subject to a corporate income tax, a reduction of the basic rate of 40% was typically part of lease negotiation.

### Production

Botswana was the world's second largest producer of gem-quality diamond, after Australia. The Jwaneng and Orapa Mines accounted for more than 20% of the world's gem-quality diamond production in 1994. Diamond production increased as the processing segment of the Fourth Stream Project at Jwaneng came on-line. (*See table 1*)

Coal, cobalt, and copper posted slight increases, while salt and soda ash output rebounded. The sluggish construction industry was reflected in declining sand and stone production.

At the beginning of 1994, 24 mining licenses were in effect. An additional six leases were granted during the year, four for aggregates and two for gold.

### Trade

Mineral commodities continued to dominate the country's exports, with Europe being the principal destination of mineral exports. Almost 80% of total export value was attributed to diamond shipments. Nickel, copper, and cobalt content of smelter matte had recently contributed an additional 10% of total export value.

## Structure of the Mineral Industry

The Government and Anglo American Corp. of South Africa Ltd. (AAC) were significant partners in Botswana's mineral industry. (See table 2.) AAC had a considerable investment in Botswana Roan Selection Trust that was the Government's partner in Bamangwato Concession Ltd. (BCL), the cobalt-copper-nickel producer. De Beers Centenary AG, an AAC-affiliated company, controlled one-half of Debswana Diamond Co. (Pty.) Ltd. AAC holdings also included interest in Tati Nickel Mining Co. (Pty.) Ltd. and Soda Ash Botswana (Pty.) Ltd.

Employment in the domestic mining industry was slightly more than 5% of a total formal (wage-earning) employment of about 250,000. Major mines, such as the BCL and Soda Ash Botswana operations, were situated in regions with few job opportunities. This, coupled with the State's ownership interest in the companies, resulted in the Government's active support of the operations, despite the companies' financial difficulties.

## Commodity Review

Most mining operations suffered from lower than expected commodity prices in 1994. However, the mining industry began recovering from the general worldwide economic recession of 1993. Besides the BCL, Debswana, and Soda Ash Botswana operations, the Botswana industry consisted of a number of medium- and small-scale mines producing aggregate, brickmaking clay, gold, and dimension stone.

## Metals

**Cobalt, Copper, and Nickel.**—BCL continued to operate under difficult financial conditions, although cobalt and copper output increased in 1994.

Tati Nickel Mining Co. continued to evaluate its Phoenix open pit mine project near Francistown, while constructing a concentration plant at the mine. The company reported potential reserves of 16 million metric tons grading 0.65% nickel and 0.3% copper for the project.

**Gold.**—Production was predominantly from the Monarch Mine, with some production provided by Minerals Holdings Botswana (Pty.) Ltd.'s dump retreatment and Kudu Mining Co.'s reopened Rainbow Mine. An Australian consortium, Southern Africa Joint Venture, acquired Mining and Development (Botswana) (Pty.) Ltd., the owner of Monarch Mine; and Shashe Mines (Pty.) Ltd.

SouthernEra Resources Ltd. of Canada, was evaluating the company's 50%-owned prospect for gold and platinum-group metals. The company indicated that coal, copper, and nickel also were present on the prospect.

Trillion Resources Ltd. of Canada was awaiting approval of 13 gold prospecting licenses in southwest Botswana. Desert sand cover had previously impaired exploration of the area.

## Industrial Minerals

**Diamond.**—At the beginning of the year, there were more than 300 active prospecting licenses in Botswana, approximately 85% of which were for diamond. De Beers Prospecting Botswana (Pty.) Ltd. continued its countrywide prospecting and processed samples from prospects in the Gope area. Debswana increased the processing capacity at the Jwaneng mine by approximately 33%.

A number of Canadian mining companies were actively exploring for diamond. Amarado Resources Ltd. renegotiated its exploration permit agreements and continued regional surface exploration. The company also was awaiting regulatory approval and funding in preparation to acquire Pyramid Mining and Exploration, a South African company with rights to licenses in Botswana.

Botswana Diamondfields Inc. collected soil samples on the Mopipi licenses and commenced the exploration of the Makgadikgadi license area. Redaurum Ltd. began drilling on its exploration lease.

Scintilore Explorations Ltd. joined Fancamp Resources Ltd. on the Gemsbok project early in the 1994. By yearend, almost half of the property had been covered by an airborne magnetic survey and Solidor Resources Inc. was brought in as the third partner in the joint venture. Southern Africa Minerals Corp. completed an airborne magnetic survey on its diamond prospects and began surface geophysical work on its Molopo licenses, while TNK Resources Inc. began airborne magnetic surveys on its Gope group of licenses, in central Botswana.

Trillion joined with two Canadian companies, Skeena Resources Ltd. and Nickelodeon Minerals Inc., to explore their Shashe diamond prospect. Trillion also was involved with Winspear Resources Ltd. and Consolidated Venturex Holdings Ltd. on the Sowa Diamond project.

Auridiam Consolidated NL of Australia obtained a prospecting license in the Orapa area.

**Gemstones.**—Masa Semi-Precious Stones (Pty.) Ltd. increased its capacity to 4,000 kilograms per year with the completion of a new factory.

**Soda Ash.**—Financial losses continued to accrue for Soda Ash Botswana. While production increased 38%, the company continued to operate at substantially less than full production capacity. The company was whiplashed in 1994 by less than projected demand, rising costs, and a price war in the South African market that depressed product prices.

## Mineral Fuels

Coal production continued to be constrained by less than expected consumption by major consumers, especially Soda Ash Botswana.

The Geologic Survey Department investigated peat deposits in northern Botswana and petroleum exploration got

underway with the drilling of five stratigraphic test holes during 1994.

### **Infrastructure**

Transportation facilities were fairly adequate on the eastern fringe of the country. Both highway and railroad connected landlocked Botswana with South Africa and Zimbabwe.

Electric generating capacity consisted of the 132-megawatt (MW) Morupule coal-fired plant and the 60-MW coal-fired plant at Selebi-Phikwe. About two-thirds of the power generated was consumed by the mining industry, most notably BCL and Debswana. Water availability was a major constraint affecting the mineral industry in Botswana.

### **Outlook**

Heavy exploration activity was expected to continue in the short term and this gave promise of new commercial mineral operations. The country's favorable geologic environment and mineral investment climate should continue to make Botswana a target for foreign mineral investment.

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<sup>1</sup>Text prepared Sept. 1995.

### **Major Sources of Information**

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### **Major Publication**

Department of Mines Annual Report. Republic of Botswana, Gaborone, annual.

TABLE 1  
BOTSWANA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993	1994
Coal, bituminous	794,000	784,000	901,000	890,000	900,000
Cobalt: Smelter output, Co content of matte 4/ 5/	205	208	208	205	225
Copper:					
Mine output, Cu content of ore milled 6/	25,300	24,800	24,400	25,100 r/	25,300
Smelter output, Cu content of matte 4/ 5/	20,600	20,600	20,400	21,000	22,800
Diamond:					
Gem and near gem e/	12,200	11,600	11,200	10,300	10,900
Industrial stones e/	5,200	4,950	4,790	4,420	4,600
Total	17,400	16,600	16,000	14,700	15,500
Gemstones, semiprecious 7/	500	205	348	40,000	67,000
Gold 8/	46	20	165	192	248
Lime	55	6	--	--	--
Manganese ore, gross weight 9/	--	--	1,320	3,700	--
Nickel:					
Mine output, ore milled	3,370	3,450	3,490	3,440	3,460
Mine output, Ni content of ore milled	23,200	23,500	23,000	23,400 r/	22,800
Smelter output, matte, gross weight 4/	48,000	48,300	48,100	50,800	51,500
Smelter output, Ni content of matte 5/	19,000	19,300	18,900	21,600	19,000
Salt 10/	--	2,600	53,700	98,000	186,000
Sand, construction 11/	165,000	341,000	190,000	150,000	140,000
Soda ash, natural	--	62,000	124,000	126,000	174,000
Stone, crushed	590,000	783,000	804,000	760,000	572,000

e/ Estimated. r/ Revised.

1/ Table includes data available through Oct. 1, 1995.

2/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

3/ In addition to commodities listed, the following were produced, but information was inadequate to reliably estimate output: silver (estimated at about 2% of reported gold bullion production) and clay for brick and tile (brick units output reported was 12.7 million for 1992 and 20.7 million for 1993, estimated as equivalent in metric tons of clay to 25,000 and 41,000 metric tons, respectively).

4/ Smelter product was granulated nickel-copper-cobalt matte.

5/ Figures also used for recoverable mine output in world production tables appearing in V. I of the Minerals Yearbook. Included some product from direct smelting ore, i.e., ore not reported as milled.

6/ Ore milled is nickel-copper-cobalt ore shown under "Nickel: Mine output, ore milled."

7/ Presumably, principally agate. Reported as sales. Only cut or polished stones could be legally exported after 1989.

8/ Reported as bullion; historically included silver estimated at about 2%.

9/ Production commenced in 1992 and ceased in Nov. 1993. Estimated at 45% Mn.

10/ From natural soda ash production.

11/ Additional production of sand and gravel from small local operations was periodically reported, but information was inadequate to reliably estimate output.

TABLE 2  
BOTSWANA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Clay, brick/tile		Lobatse Clay Works (Pty.) Ltd. (Botswana Development Corp./ Interkiln Corp. joint venture)	Lobatse, 70 kilometers south-southwest of Gaborone	50,000 e/
Do.		Makoro Brick and Tile (Pty.) Ltd.	Makoro, 10 kilometers south of Palapye	20,000 e/
Coal		Morupule Colliery (Pty.) Ltd. (Anglo American Corp. of South Africa Ltd. (AAC) and related firms, at least 90%.)	Morupule, 270 kilometers north-northeast of Gaborone	1,000,000
Cobalt 1/		BCL Ltd., (Government, 30%; Botswana RST Ltd. (BRST), 70%)	Selebi-Phikwe, 350 kilometers northeast of Gaborone	300
Copper 1/		BCL Ltd. (Government, 30%; BRST, 70%)	do.	20,000
Copper ore		Tati Nickel Mining Co. (Pty.) Ltd. (AAC, 51%)	Selkirk Mine, 23 kilometers east of Francistown	80,000 2/
Diamond	million carats	Debswana Diamond Company (Pty.) Ltd. (Government, 50%; De Beers Centenary AG, 50%)	Orapa, Lethakane, and Jwaneng, respectively 375 kilometers north, 350 kilometers north, and 115 kilometers west of Gaborone	17.5 e/
Gemstones, semiprecious	kilograms	Agate Botswana (Pty.) Ltd.	Processing plant at Pilane, 45 kilometers north of Gaborone	33,000
Gold bullion 3/	do.	Mining and Development (Botswana) (Pty) Ltd. (Southern Africa Joint Venture)	Monarch Mine, just north of Francistown	600
Nickel 1/		BCL Ltd. (Government, 30; BRST, 70%)	Selebi-Phikwe, 350 kilometers northeast of Gaborone	22,000
Nickel ore		Tati Nickel Mining Co. (Pty.) Ltd. (AAC, 51%)	Selkirk Mine, 23 kilometers east of Francistown	60,000 5/
Salt		Soda Ash Botswana (Pty.) Ltd. (Government, 48%; AECI Chlor-Plastics Ltd., 26.5%; AAC, 12.75% De Beers Centenary AG, 12.75%)	Sua Pan, 450 kilometers north of Gaborone	650,000
Soda ash		do.	do.	300,000

e/ Estimate. NA Not available.

1/ In nickel-copper-cobalt smelter matte.

2/ Grading at an estimated 2.0% copper.

3/ Botswana bullion typically had silver content estimated at 2%.

4/ Production commenced in 1992 and ceased in Nov. 1993.

5/ Grading at an estimated 2.4% nickel.